

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,888,853 B1  
APPLICATION NO. : 09/786742  
DATED : May 3, 2005  
INVENTOR(S) : Heinrich Jurgensen

Page 1 of 16

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title page should be deleted and substituted with the attached title page.

Title page,

Item [56], **References Cited**, substitute the following references:

-- U.S. PATENT DOCUMENTS

3,931,458 A *	1/1976	Dini.....	358/3.29
RE32,139 E *	5/1986	Taudt et al.....	358/524
4,729,037 A *	3/1988	Doelves.....	358/3.29
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5,363,233 A *	11/1994	Pernick.....	359/316
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5,780,200 A *	7/1998	Kitaguchi et al. ....	430/270.1
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5,867,305 A *	2/1999	Waarts et al. ....	359/341
5,900,109 A *	5/1999	Sanders et al. ....	156/552
5,949,466 A *	9/1999	Kerr et al. ....	347/213
5,953,036 A *	9/1999	Furlani et al. ....	347/139
6,106,627 A *	8/2000	Yializis.....	118/724
6,136,375 A *	10/2000	Bressler et al. ....	427,277
6,167,075 A *	12/2000	Craig et al. ....	372/75
6,283,022 B1 *	9/2001	Kamen et al. ....	101/129

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Page 2 of 16

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Title page (cont'd),

FOREIGN PATENT DOCUMENTS

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Gesamtkatalog G3; Best j- Nr. 650020; Fa. Laser Spindler & Hoyer, Göttlingen; Seiten F16-F33; Seite G16; Seiten K16 und K17

Optimization of micro channel heat sinks for high power diode laser in copper technology; SPIE Proceedings Vol 3097, 1997

1998 Semiconductor Laser Product Catalog-SDL Copyright 1997 SDL, Inc. pp. 40-45

\* cited by examiner

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Page 3 of 16

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Title page (cont'd).

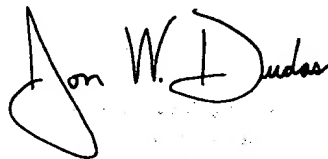
Drawings.

Replace Figures 1, 3, 5, 6, 11, 24, 25, 26, 28, 29, 31, and 34 with the attached Figures 1, 3, 5, 6, 11, 24, 25, 26, 28, 29, 31, and 34 as shown on the attached pages.

This certificate supersedes Certificate of Correction issued November 15, 2005.

Signed and Sealed this

Tenth Day of October, 2006

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looping initial "J" and a distinct "D".

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*



US00688853B1

(12) **United States Patent**  
**Jürgensen**

(10) Patent No.: **US 6,888,853 B1**  
(45) Date of Patent: **May 3, 2005**

(54) **LASER RADIATION SOURCE**

(75) Inventor: **Heinrich Jürgensen, Raisdorf (DE)**

(73) Assignee: **Hell Gravure Systems GmbH, Kiel (DE)**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/786,742**

(22) PCT Filed: **Sep. 1, 1999**

(86) PCT No.: **PCT/DE99/02721**

§ 371 (c)(1),  
(2), (4) Date: **Sep. 14, 2001**

(87) PCT Pub. No.: **WO00/13839**

PCT Pub. Date: **Mar. 16, 2000**

(30) **Foreign Application Priority Data**

Sep. 8, 1998 (DE) ..... 198 40 926

(51) Int. Cl.<sup>7</sup> ..... **H01S 3/067; B41F 9/00; G03F 7/00; B41J 2/435**

(52) U.S. Cl. .... **372/6; 372/9; 372/24; 101/150; 101/153; 430/269; 430/300; 430/307; 347/224; 347/233; 347/238; 347/241**

(58) Field of Search ..... **372/6, 9, 24, 26, 372/69; 101/150, 153; 430/269, 300, 307; 347/224, 233, 238, 241**

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5,760,880 A 6/1998 Fan et al. .... 355/67  
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5,798,202 A \* 8/1998 Cushman et al. .... 430/306  
5,829,881 A \* 11/1998 Purlani et al. .... 384/42  
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5,949,466 A \* 9/1999 Kerr et al. .... 347/213  
5,953,036 A \* 9/1999 Purlani et al. .... 347/139  
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6,136,375 A \* 10/2000 Bressler et al. .... 427/277  
6,167,075 A \* 12/2000 Craig et al. .... 372/75  
6,283,022 B1 \* 9/2001 Kamen et al. .... 101/129

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Fiber Technology Ushers In New Laser Devices—Feature: Fiber Lasers May 1991 Laser Focus World—pp. 231–238.  
1998 Semiconductor Laser Product Catalog—SDL Copy-right 1997 SDL, Inc. pp. 40–45.

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Primary Examiner—Don Wong

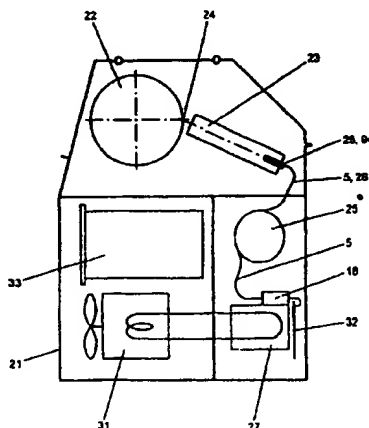
Assistant Examiner—James Menefee

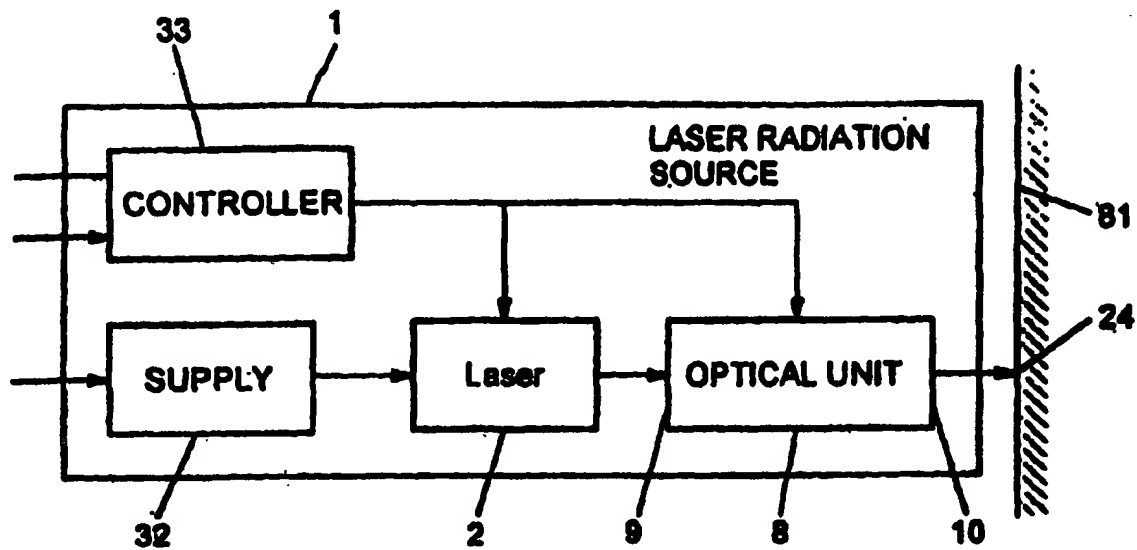
(74) Attorney, Agent, or Firm—Schiff Hardin LLP

(57) **ABSTRACT**

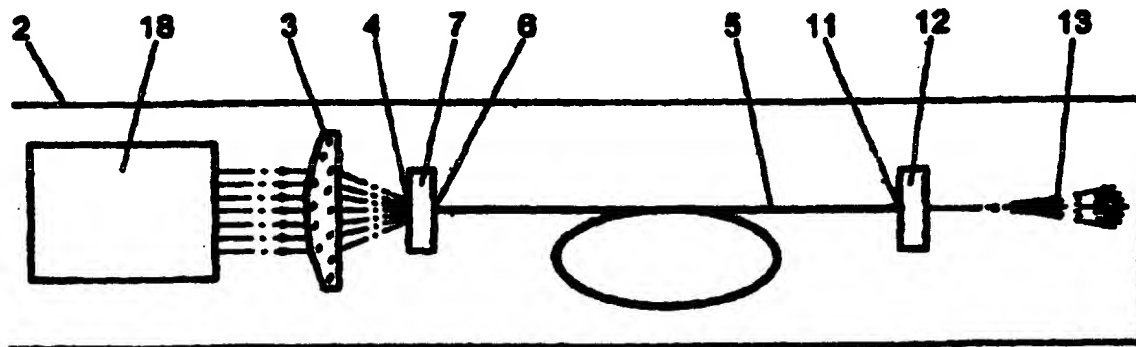
A system and method for selectively process material on a processing surface of a printing form to create a fine structure or pattern for images or text. At least one fiber laser comprising a pump source and a laser fiber is provided. A laser gun is mounted adjacent the printing form and has at least a focusing optics. The fiber laser outputs a laser beam which is diffraction-limited to permit the focusing optics to focus the laser beam onto the processing surface of the printing form as a spot having a spot size sufficiently small to process the processing surface to create the fine structure or pattern images or text.

296 Claims, 39 Drawing Sheets





**Fig. 1**



**Fig. 2**  
**(PRIOR ART)**

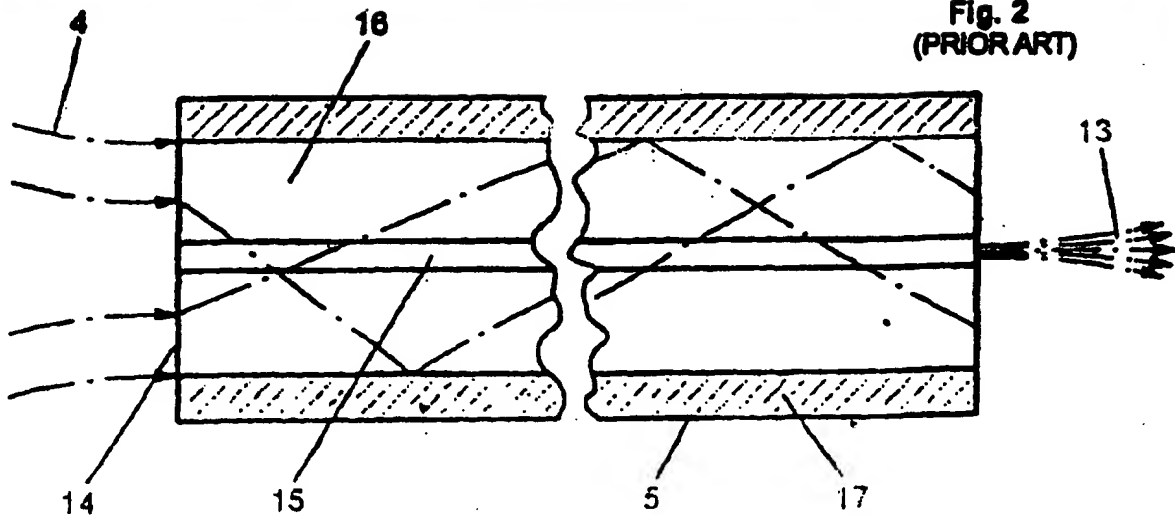
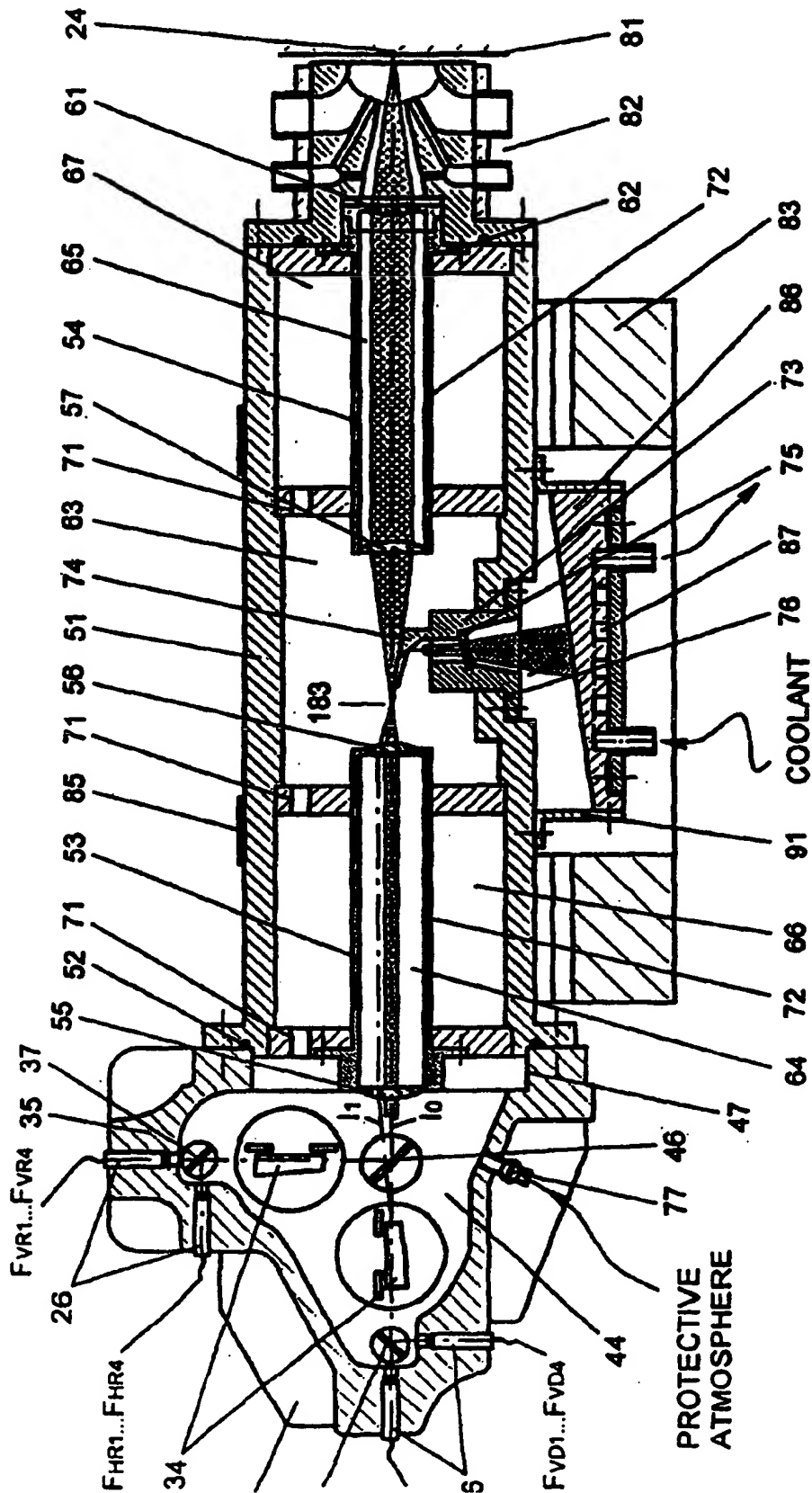


Fig. 2a  
(PRIOR ART)



**Fig. 4**

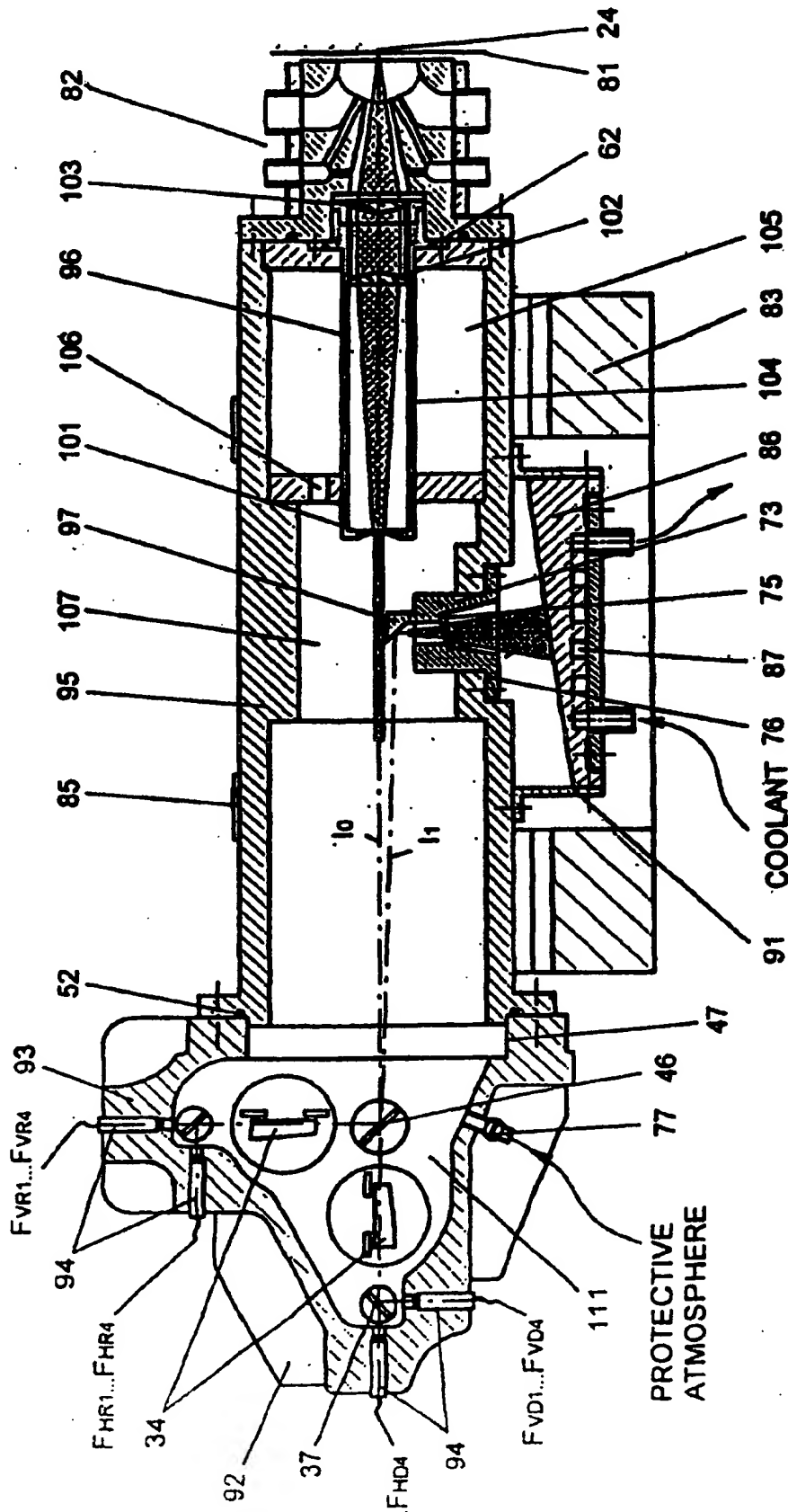
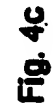


Fig. 4b



**Fig. 4c**



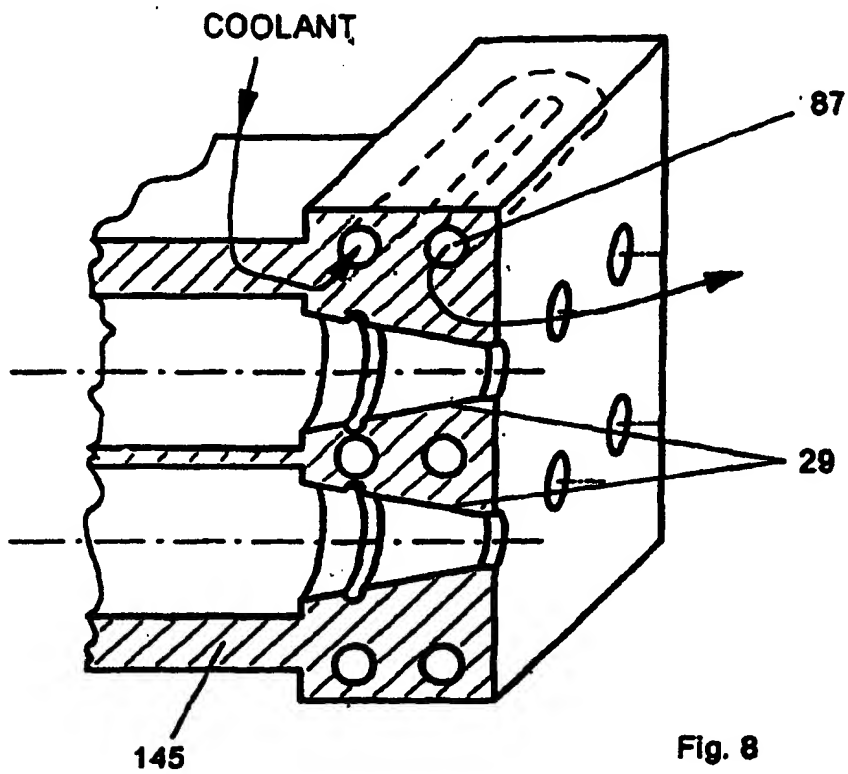


Fig. 8

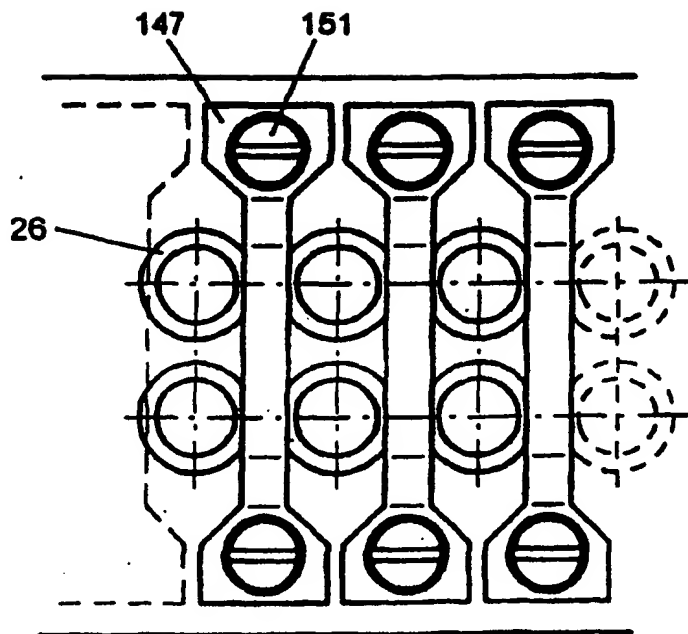


Fig. 8a

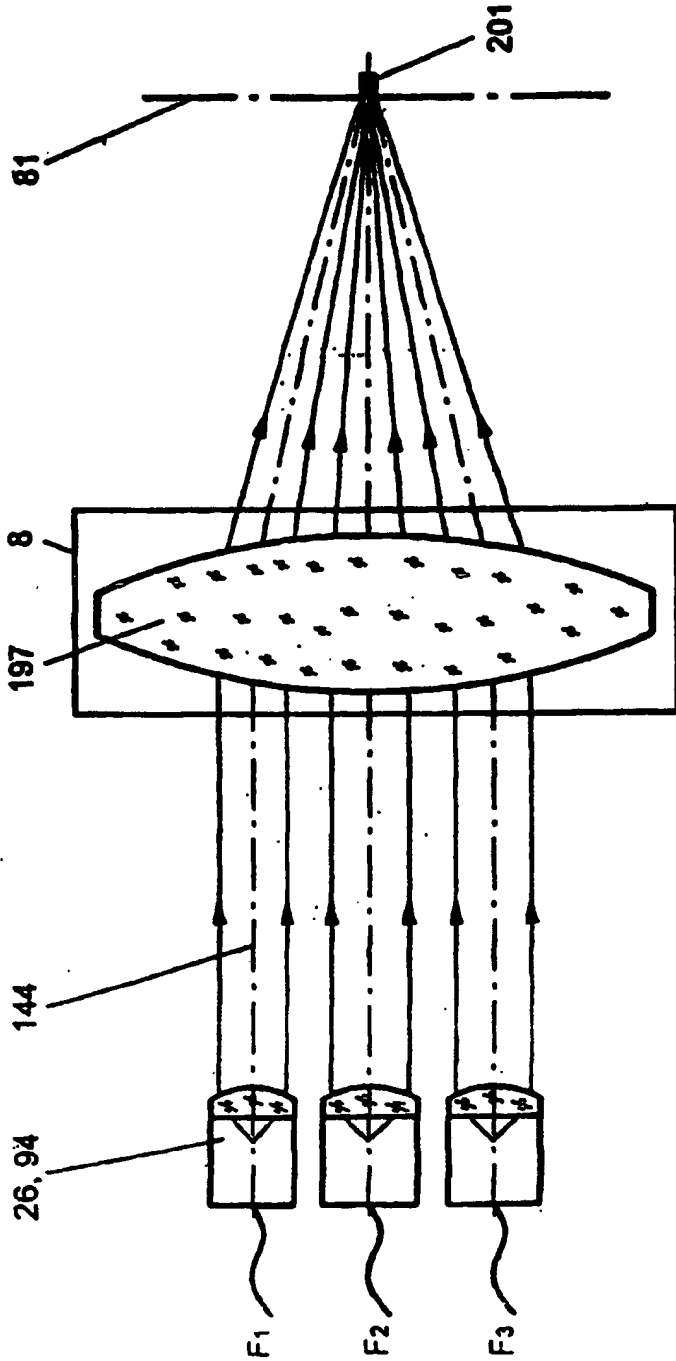


Fig. 31



Fig. 30

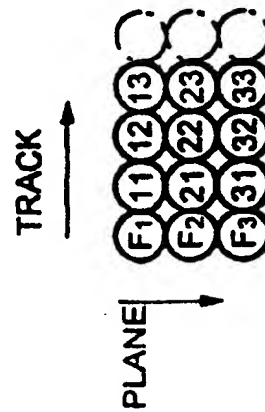
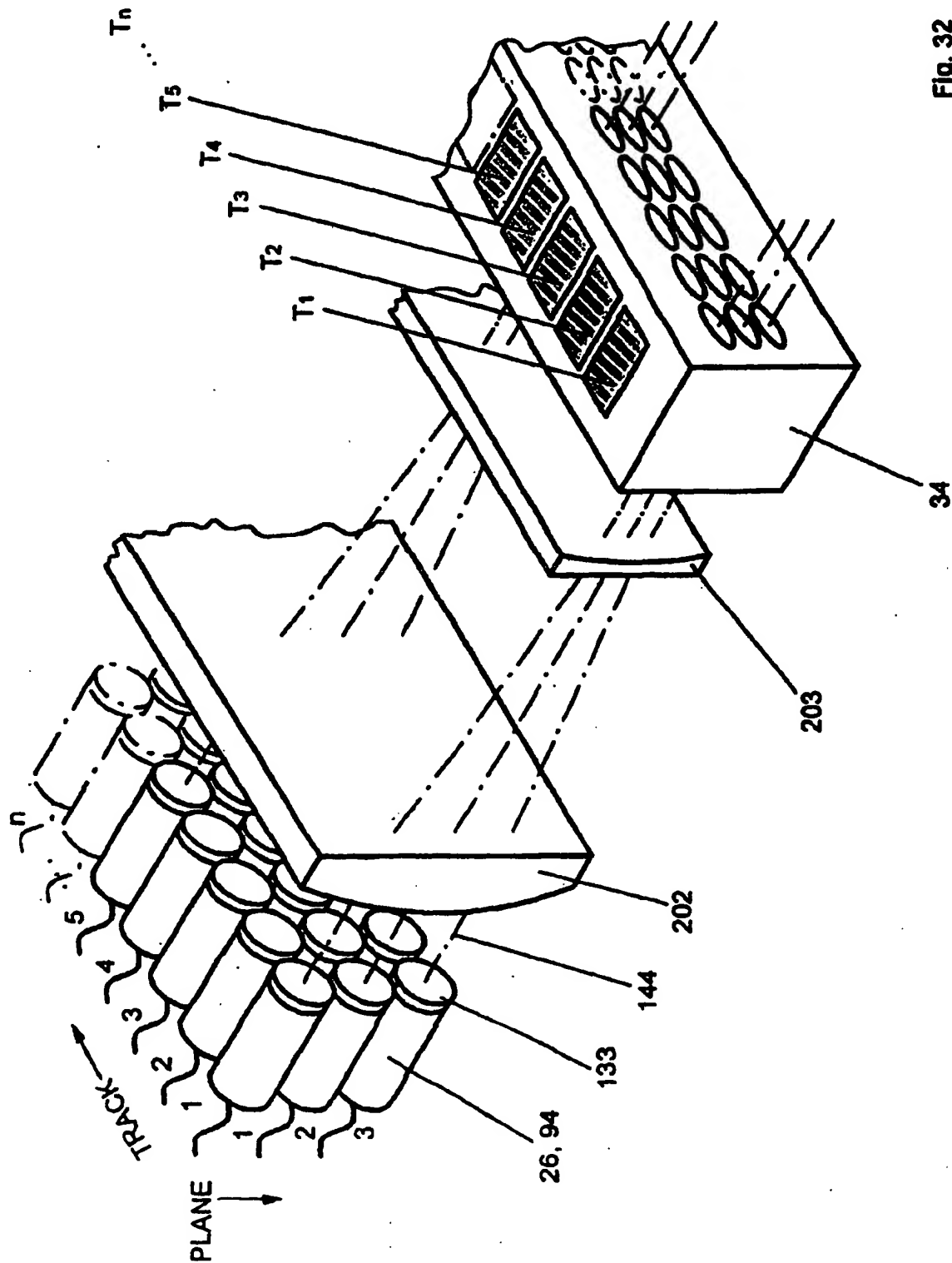
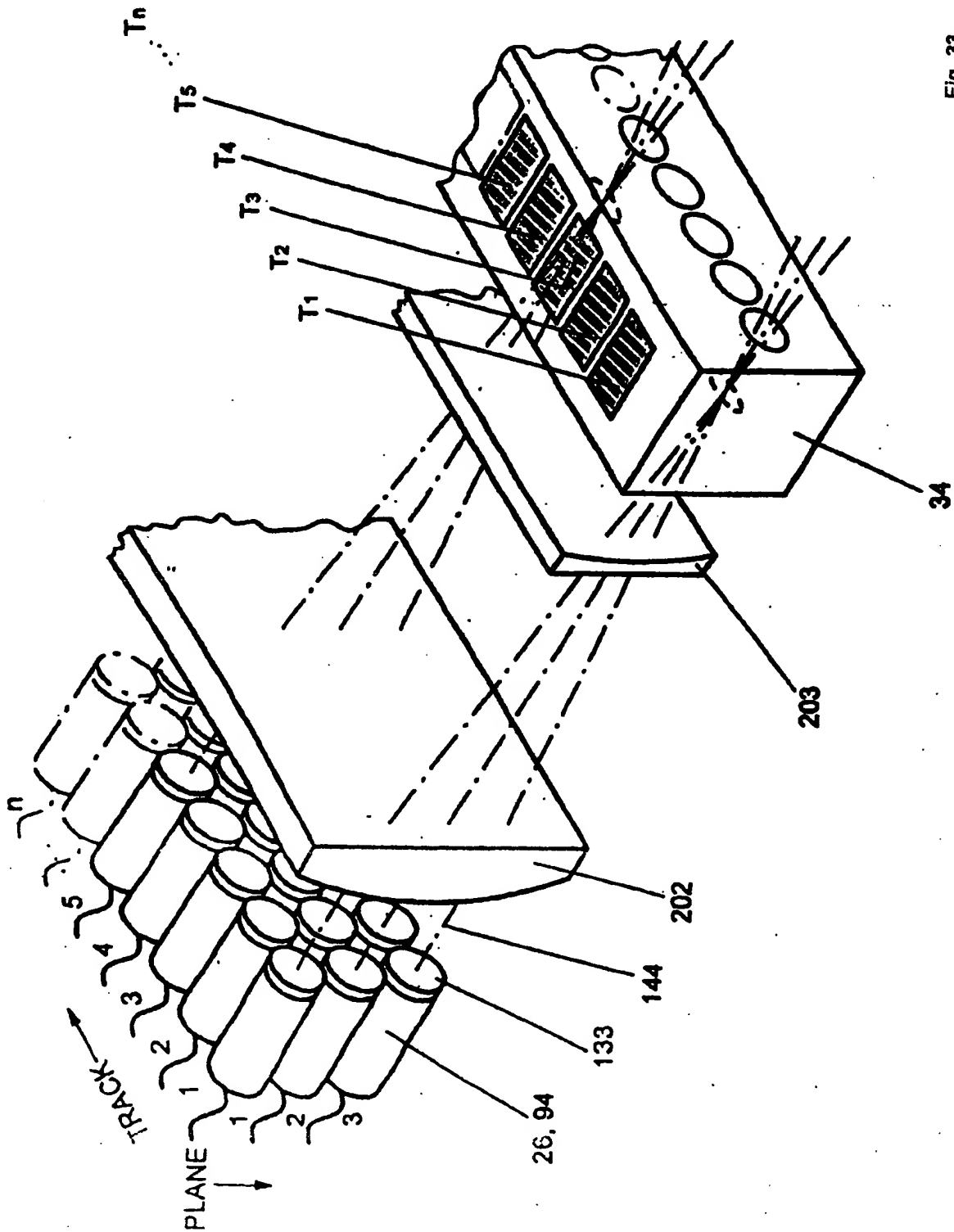


Fig. 29





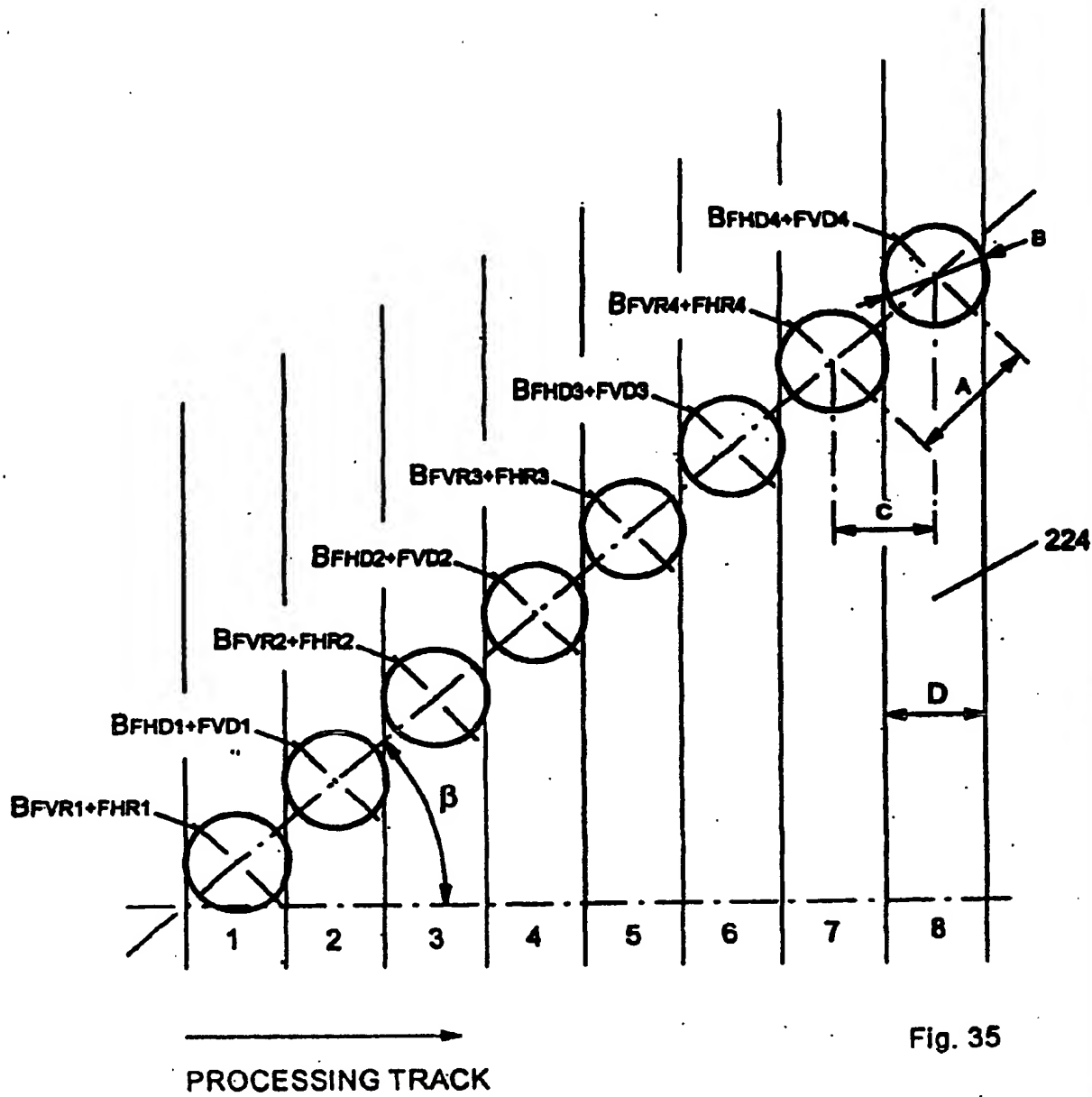


Fig. 35

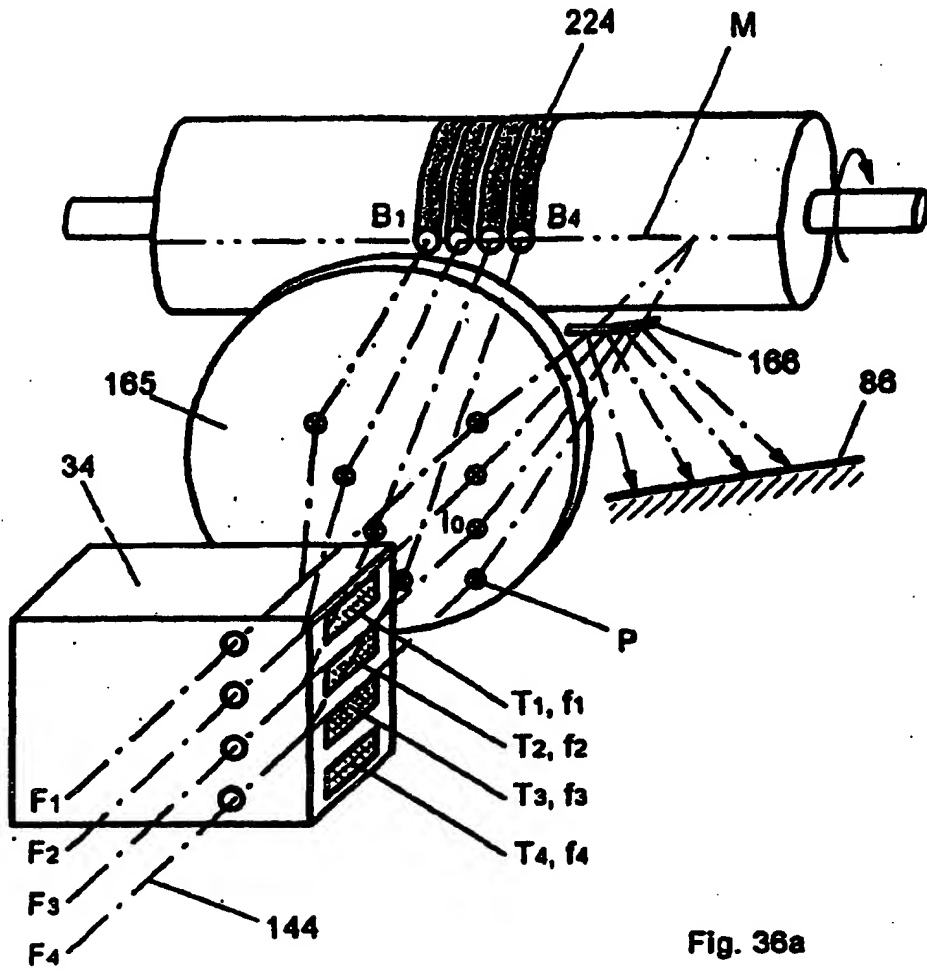


Fig. 36a

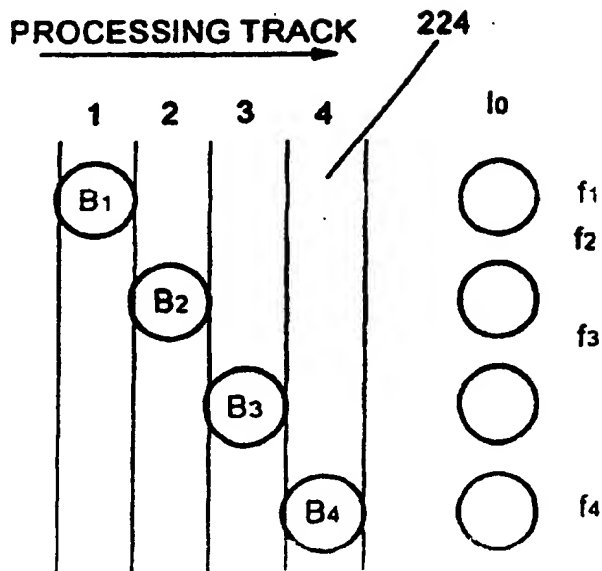


Fig. 36

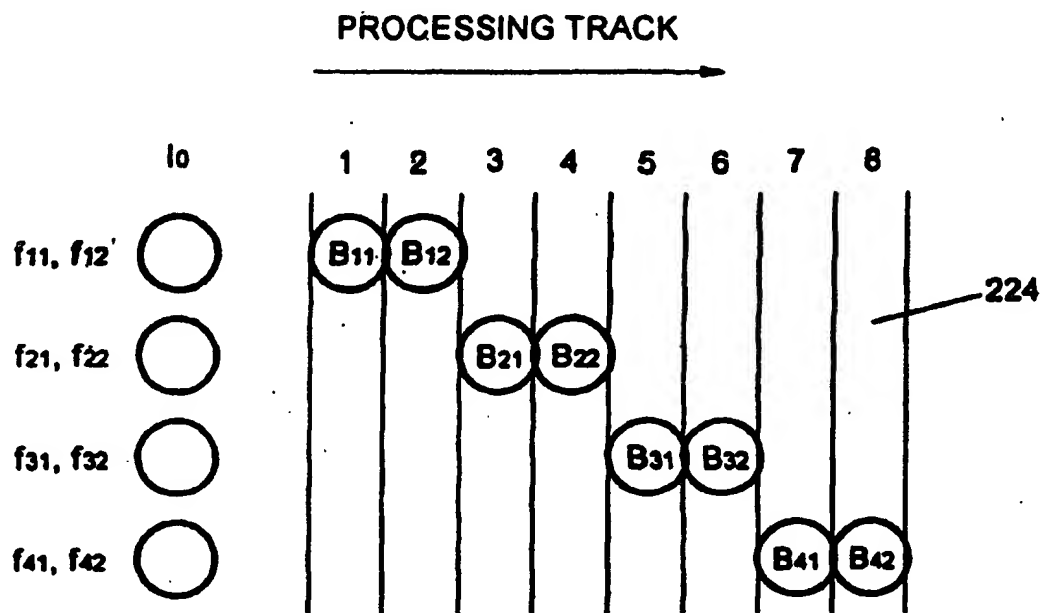


Fig. 37

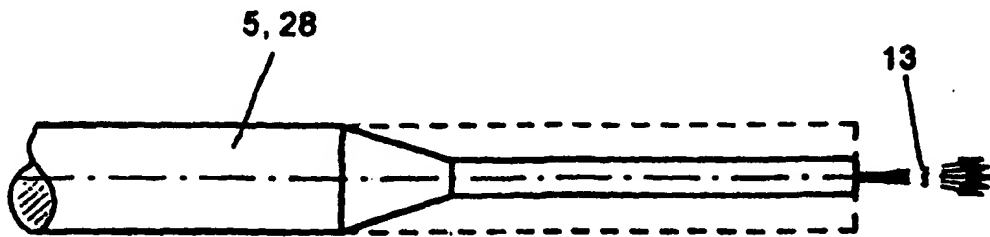


Fig. 40

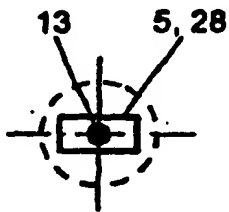


Fig. 40a

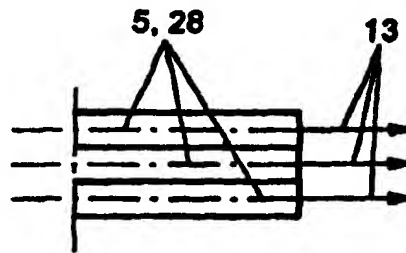


Fig. 40b

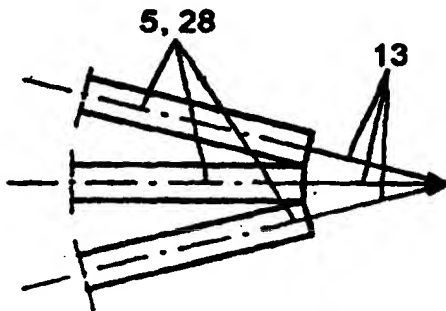


Fig. 40c

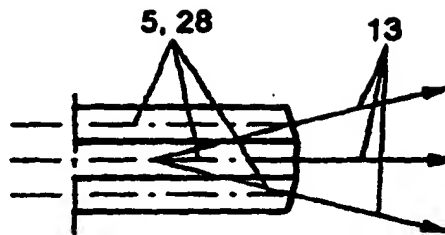


Fig. 40d

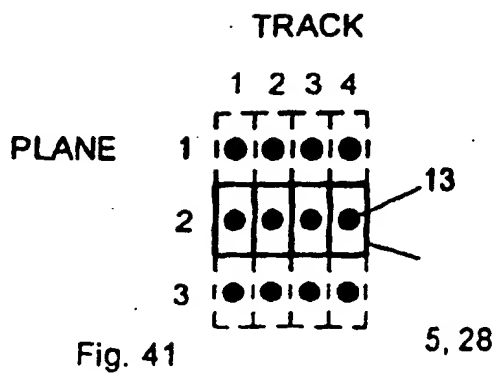


Fig. 41